Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Cardiology

Atrial Fibrillation-A Puzzle for Treatment and New Approaches?

Dr. R. Aravazhi, MD, DnB, DM(Card)[1*], Dr. M. Venkatesh, MD Gen Medicine[2]

[1]Assistant Professor of Cardiology, Govt. Theni Medical College, Opp Govt Theni Medical College, K. Villakku, Tamil Nadu, 625531, India
[2]Associate Professor, Govt. Theni Medical College, Opp Govt Theni Medical College, K. Villakku, Tamil Nadu, 625531, India

DOI: 10.36347/sjams.2019.v07i10.043 | **Received:** 23.09.2019 | **Accepted:** 01.10.2019 | **Published:** 30.10.2019

***Corresponding author:** Dr. R. Aravazhi

Abstract | **Original Research Article**

A trail fibrillation is the commonest sustained cardiac arrhythmia. It accounts for >35% of all hospital admissions for cardiac arrhythmias. The presence of atrial fibrillation increases the mortality of a population by up to twofold. The risk of stroke increases from 1.5% in patients with atrial fibrillation from 50–59 years of age to up to 23.5% for such patients aged 80–89 years. Atrial fibrillation is the commonest cardiac arrhythmia. It affects 5% of people above the age of 65 years and 10% above 75.The most important mor-bidity and mortality associated with atrial fibril-lation result from stroke. The attributable risk of stroke increased from 1.5% for patients with atrial fibrillation aged 50–59 years to 23.5% for those aged 80–89 years. It is also associated with congestive heart failure.[2]

Present study revealed 38 patients who were treated for AF with arrhythmic drugs and ablation were quite stable with atrial flutter as clinical problem and the remaining 24 patients showed recurrences even after combination of treatment

Keywords: Drugs, electric cardioversion, ablation, pacemaker.

PHYSIOLOGY

Atrial fibrillation is a heart rhythm disturbance that causes an irregular (and often rapid) heartbeat. It replaces the normal heartbeat, which originates in the sinus node (Figure-1) [1].

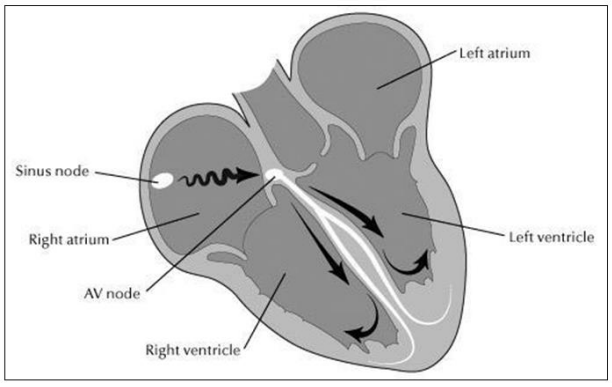


Fig-1

During atrial fibrillation, the top chambers of the heart (the atria) lose their normal, organized electrical activity and develop a chaotic, unorganized rhythm that makes the bottom chambers (the ventricles) beat irregularly (Figure-2) [1].

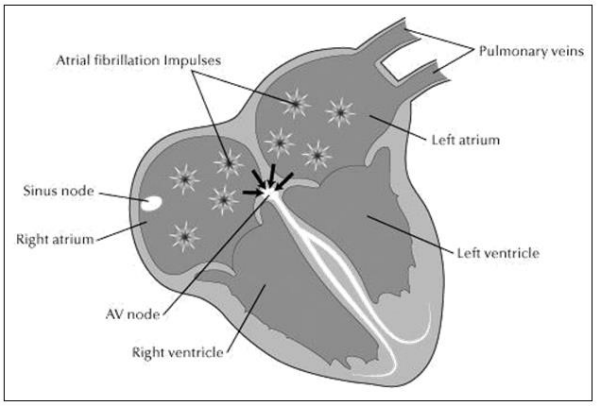


Fig-2

INTRODUCTION

Atrial fibrillation is the commonest sustained cardiac arrhythmia. It accounts for >35% of all hospital admissions for cardiac arrhythmias. The presence of atrial fibrillation increases the mortality of a population by up to twofold. The risk of stroke increases from 1.5% in patients with atrial fibrillation from 50–59 years of age to up to 23.5% for such patients aged 80–89 years. Atrial fibrillation is the commonest cardiac arrhythmia. It affects 5% of people above the age of 65 years and 10% above 75.The most important mor-bidity and mortality associated with atrial fibril-lation result from stroke. The attributable risk of stroke increased from 1.5% for patients with atrial fibrillation aged 50–59 years to 23.5% for those aged 80–89 years. It is also associated with congestive heart failure [2].

DEFINITION

Atrial fibrillation is defined when there is complete absence of coordinated atrial systole resulting in the absence of P wave before each QRS complex in the electrocardiogram (ECG). The P waves are replaced by fibrillatory "f " waves which vary in size, shape, and timing [6] (caution: atrial fibrillation with complete heart block may present with regular R-R intervals in the ECG).

CAUSES

Cardiovascular causes

- Hypertension.
- Ischaemic heart disease.
- Rheumatic heart disease.
- Cardiomyopathy.
- Pericarditis.
- Congenital heart disease, in particular, atrial septal defect.
- Postoperative cardiac surgery.
- Wolff-Parkinson-White syndrome.
- Hypertrophic cardiomyopathy.
- Sick sinus syndrome.
- Pulmonary embolism.
- Primary pulmonary hypertension.
- Diabetes mellitus.

Coexisting with other cardiac arrhythmias

- Atrioventricular re-entrant tachycardias.
- Atrioventricular nodal re-entrant tachycardias.
- Atrial tachycardia.

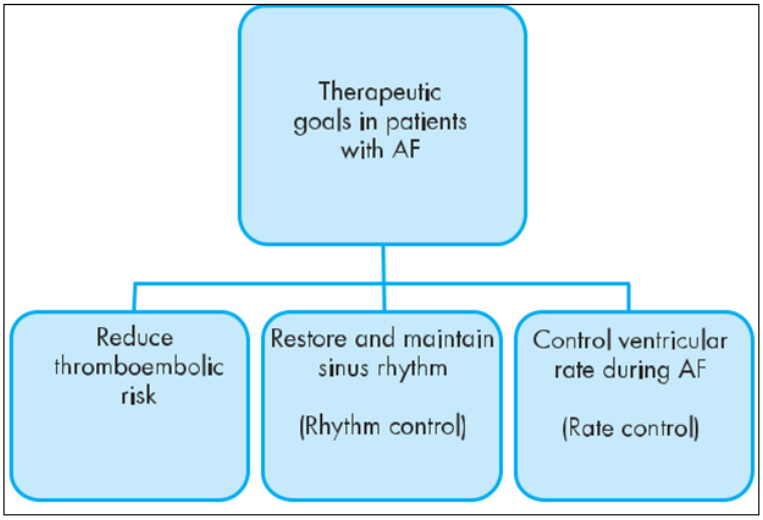
Non-cardiovascular causes

- Hyperthyroidism.
- Pneumonia/chronic obstructive airways disease.
- Alcohol binge.
- Postoperative (non-cardiac surgery).

PRINCIPLE OF TREATMENT [2]

The present treatment of atrial fibrillation is based on four main principles:

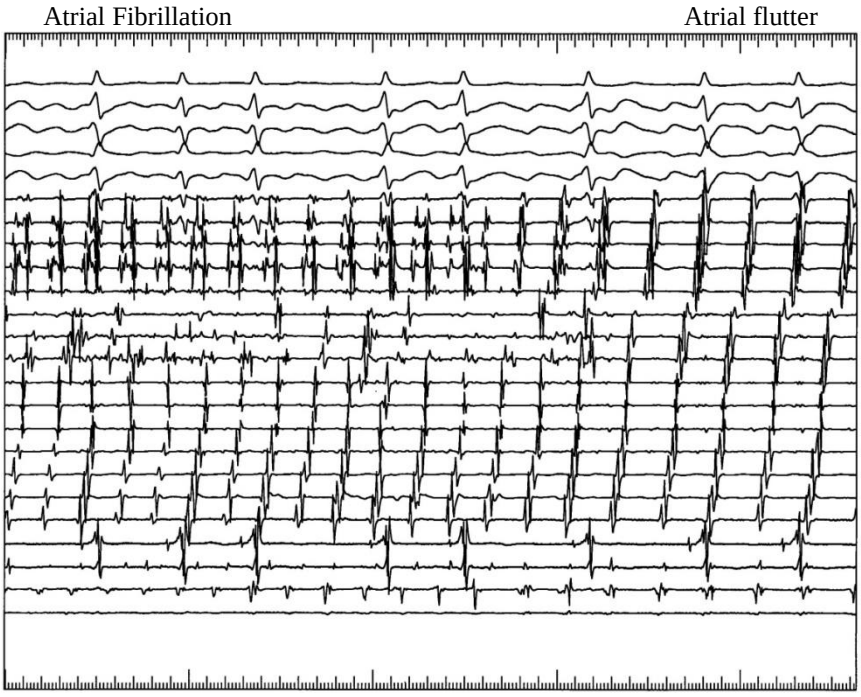
1. Restoration of sinus rhythm.
2. Rate control.
3. Maintenance of sinus rhythm.
4. Prevention of thromboembolism



Therapeutic goals in patients with atrial fibrillation

MATERIAL AND METHODS

62 patients suffering with atrial fibrillation were identified who have taken treatment earlier from registry were examined in the department of cardiology. These patients were treated with arrhythmic drugs, electrical cardioversion. However, new approaches such as preventative pacing, the atrial defibrillator and focal or linear catheter ablation have been developed for a subgroup of patients, depending on the mechanism of AF initiation or refractoriness to drug therapy. The concomitant use of drugs and pacing or ablation has recently been named 'hybrid treatment [3].



DISCUSSION

Schumacher *et al*., [4] reported on a series of 187 patients from an AF registry who were treated with either oral flecainide or propafenone. Of these patients, 12.8% developed atrial flutter during follow-up. Electrophysiological study then revealed typical atrial flutter in 20 patients (10.7%). All patients underwent right atrial linear isthmus ablation.

These findings were supported by Nabar *et al.*, [5] who studied the effect of additional isthmus ablation for atrial flutter in 24 consecutive patients presenting with AF who developed atrial flutter after intravenous administration of propafenone or flecainide.

In a larger study conducted in 82 consecutive patients, Nabar *et al.*, [6] studied patients with documented typical atrial flutter with or without concomitant AF. In their series, linear isthmus ablation was performed in all patients.

In a report by Huang and coworkers [7] on 13 patients who converted to either typical or atypical atrial flutter following antiarrhythmic drug treatment, a total of 88.9% of the patients remained in sinus rhythm after successful ablation of the inferior isthmus.

In another very interesting report, Philippon *et al.*, [8] studied the risk for recurrence of AF in patients who had atrial flutter as the major clinical problem and AF as a concomitant arrhythmia. In their series of patients, after isthmus ablation of atrial flutter, they observed a recurrence of atrial flutter in 5.9% of the patients and recurrence of AF in 26.4%.

Present study revealed 38 patients who were treated for AF with arrhythmic drugs and ablation were quite stable with atrial flutter as clinical problem and the remaining 24 patients showed recurrences even after combination of treatment.

CONCLUSION

Because antibradycardia pacing and ablation have not proven to be sufficiently effective when used as a stand-alone therapy in the prevention of AF on a larger scale, combined therapy using these non-pharmacological approaches and antiarrhythmic drugs may be the approach of choice for many patients. One possible way to achieve clinical and symptomatic improvement in a subgroup of patients with AF is a hybrid therapy with a class IC drug and linear isthmus ablation. There is no single and definitive treatment for atrial fibrillation.

REFERENCES

1. Fred Morady MD. University of Michigan Electrophysiology Service, july 2011.
2. Lairikyengbam SK, Anderson MH, Davies AG. Present treatment options for atrial fibrillation. Postgraduate medical journal. 2003 Feb 1;79(928):67-73.
3. Wolpert C, Haase KK, Süselbeck T, Borggrefe M. Hybrid therapy for atrial fibrillation. European Heart Journal Supplements. 2003 Sep 1;5(suppl_H):H51-H55.
4. Schumacher B, Jung W, Lewalter T, Vahlhaus C, Wolpert C, Lüderitz B. Radiofrequency ablation of atrial flutter due to administration of class IC antiarrhythmic drugs for atrial fibrillation. The

American journal of cardiology. 1999 Mar 1;83(5):710-3.

5. Nabar A, Rodriguez LM, Timmermans C, Van Mechelen R, Wellens HJ. Class IC antiarrhythmic drug induced atrial flutter: electrocardiographic and electrophysiological findings and their importance for long term outcome after right atrial isthmus ablation. Heart. 2001 Apr 1;85(4):424-9.
6. Nabar A, Rodriguez LM, Timmermans C, van den Dool A, Smeets JL, Wellens HJ. Effect of right atrial isthmus ablation on the occurrence of atrial fibrillation: observations in four patient groups having type I atrial flutter with or without associated atrial fibrillation. Circulation. 1999 Mar 23;99(11):1441-5.
7. Huang DT, Monahan KM, Zimetbaum P, Papageorgiou P, Mepstein L, Josephson ME. Hybrid pharmacologic and ablative therapy: a novel and effective approach for the management of atrial fibrillation. Journal of cardiovascular electrophysiology. 1998 May;9(5):462-9.
8. Philippon F, Plumb VJ, Epstein AE, Kay GN. The risk of atrial fibrillation following radiofrequency catheter ablation of atrial flutter. Circulation. 1995 Aug 1;92(3):430-5.